

WHAT IS CLAIMED IS:

1. A cleaning solution comprising about 5-30% by weight of fluoric salt,
about 10-20% by weight of organic acid, about 30-50% by weight of organic solvent,
5 and about 50% by weight of water.

2. The cleaning solution as claimed in claim 1, wherein said fluoric salt
includes ammonium fluoride.

10 3. The cleaning solution as claimed in claim 1, wherein said organic acid
includes acetic acid.

4. The cleaning solution as claimed in claim 1, wherein said organic
solvent includes dimethyl acetamid.
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5. The cleaning solution as claimed in claim 1, further comprising about
10% or less by weight of $(\text{NH}_3\text{OH})_2\text{SO}_4$.

6. A method of cleaning ceramic parts on which plasma reaction by-
20 products are adsorbed, comprising:

dipping the ceramic parts into a cleaning solution including about 5-30% by
weight of fluoric salt, about 10-20% by weight of organic acid, about 30-50% by
weight of organic solvent, and about 50% by weight of water;

rinsing said ceramic parts; and

25 treating said ceramic parts with heat.

7. The method of cleaning ceramic parts as claimed in claim 6, wherein said by-products are at least one selected from the group consisting of C, N, O, Si, Cl, Al, and Ti.

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8. The method of cleaning ceramic parts as claimed in claim 6, wherein said fluorine salt includes ammonium fluoride.

9. The method of cleaning ceramic parts as claimed in claim 6, wherein said organic acid includes acetic acid.

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10. The method of cleaning ceramic parts as claimed in claim 6, wherein said organic solvent includes dimethyl acetamide.

11. The method of cleaning ceramic parts as claimed in claim 6, wherein said cleaning solution further comprises about 10% or less by weight of $(\text{NH}_3\text{OH})_2\text{SO}_4$.

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12. The method of cleaning ceramic parts as claimed in claim 6, wherein a temperature of said cleaning solution is at least about 30°C.

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13. The method of cleaning ceramic parts as claimed in claim 6, wherein said ceramic parts are dipped into the cleaning solution for about 1 hour to about 5 hours.

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14. The method of cleaning ceramic parts as claimed in claim 6, further comprising the step of dipping said ceramic parts into a strong alkali solution after said dipping of the ceramic parts into the cleaning solution.

5 15. The method of cleaning ceramic parts as claimed in claim 14, wherein a temperature of said strong alkali solution is at least about 30°C.

16. The method of cleaning ceramic parts as claimed in claim 14, wherein said strong alkali solution includes a sodium hydroxide aqueous solution.

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17. The method of cleaning ceramic parts as claimed in claim 14, wherein a concentration of said sodium hydroxide aqueous solution is in a range of about 1N to about 3N.

15 18. The method of cleaning ceramic parts as claimed in claim 6, further comprising treating said ceramic parts with an ultrasonic wave and baking said ceramic parts after said treating of said ceramic parts with heat.

20 19. A method of cleaning ceramic parts on which etching by-products are adsorbed, comprising:

using an etching apparatus to etch a layer formed on a semiconductor substrate, wherein etching by-products are absorbed onto ceramic parts of the etching apparatus;

25 dipping said ceramic parts into a first cleaning solution including about 5-30% by weight of fluoric salt, about 10-20% by weight of organic acid, about 30-50% by

weight of organic solvent, and about 50% by weight of water;

dipping said ceramic parts into a second cleaning solution of sodium hydroxide aqueous solution;

rinsing said ceramic parts; and

5 treating said ceramic parts with heat.

20. The method of cleaning ceramic parts as claimed in claim 19, wherein a whole surface of said layer is exposed over an upper surface of said semiconductor substrate.

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21. The method of cleaning ceramic parts as claimed in claim 19, wherein said layer is formed under a nitride based hard mask pattern.

22. The method of cleaning ceramic parts as claimed in claim 19, wherein
15 said fluoric salt includes ammonium fluoride.

23. The method of cleaning ceramic parts as claimed in claim 19, wherein said organic acid includes acetic acid.

20 24. The method of cleaning ceramic parts as claimed in claim 19, wherein said organic solvent includes dimethyl acetamid.

25. The method of cleaning ceramic parts as claimed in claim 19, wherein said cleaning solution further comprises about 10% or less by weight of $(\text{NH}_3\text{OH})_2\text{SO}_4$.